



BACTERIOLOGICAL PROFILE OF URINE IN PATIENTS WITH URINARY BLADDER CALCULI

General Surgery

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ABSTRACT

Introduction:- Urinary bladder calculi is a most commonly encountered urological problem. The association of urinary bladder calculi and urinary tract infection is well known. In this study we aim to look at the bacteriological profile of urine in patients with urinary bladder calculi. **Aims:-** To look for the bacteriological profile of urine in patients with urinary bladder calculi. **Methods:-** The present study carried out in department of surgery, Silchar Medical College and Hospital in patients with urinary bladder calculi. Diagnosis of urinary bladder calculi was confirmed and a complete assessment of patients was done. A morning mid stream urine collected in a sterile container and sent to department of microbiology at Silchar medical college & hospital to look at the bacteriological flora of urine. Then, the bacteriological profile of urine studied. It is a prospective observational study for 6months (1st April, 2022 to 30th September, 2022) in the Department of surgery, Silchar Medical College and Hospital. **Results and Discussion:-** Majority of the patients were from 51-60 age group (27.42%) and most of the patients were male (83.87%). Majority belonged to rural areas (88.71%) and to the lower socio-economic class (54.84%). Most commonly found organism in urine culture was E.coli (38.71% cases), followed by Klebsiella (20.97% cases). Burning micturition was found to be the most common presenting symptom (93.55% cases). Associated illness were found to be BPH, Phimosiis, Stricture urethra, Meatal stenosis, Hypertension, Diabetes mellitus, and Anaemia. **Conclusion:-** Urinary bladder calculi is commonly seen in elderly males of lower socio-economic status people. Burning Micturition was the most common presenting symptom. E.coli was found to be the most common causative organism found on urine analysis.

KEYWORDS

Bacteriological Profile, Urinary Bladder Calculi, Cystolithiasis.

INTRODUCTION

Urinary bladder calculi, also known as Cystolithiasis, is a condition in which there is formation of stones in the urinary bladder, predominantly affecting the males.

This condition has affected individuals since time immemorial.¹ Among the lower urinary tract lithiasis, urinary bladder calculi is the most commonly seen. Urinary bladder calculi accounts for around 5% of all urolithiasis. Primary bladder calculi develop in the bladder, in absence of urinary tract abnormalities. They are mostly found in children and occur due to poor diet and substandard living conditions. These are found in endemic regions. Secondary bladder calculi develops as a results of a disease process, most common being the bladder outlet obstruction. They are common in older men.⁸

Urolithiasis is often associated with urinary tract infection as the stone makes the urinary tract susceptible to it and also, the infection leads to further stone formation.² It occurs because, obstruction due to stones leads to stasis of urine and thereby, the bacteria gets adhered to the urothelium and then, they multiply, leading to infection. A vicious cycle is seen, "stones → obstruction → urinary stasis → infection → stones".⁷

Therefore, this study was conducted, to evaluate the bacteriological profile of urine in the patients with urinary bladder calculi.

Review Of Literature

Shamshad M.F. et al (2022) has conducted a study and 80 patients were included in the study. It was found that 46 patients were male and 34 patients were female. In this study, it was observed that, on urine analysis, the most common organism was Staphylococcus aureus followed by E.coli.⁶

Malladad N. Et al, 2018, have conducted a prospective study for a period of 18 months, and 42 patients were included in the study. Majority of the patients (57%) belonged to younger age group (<10years), followed by, 14% cases belonging to older age group (>60years). It was found that 36 patients were male and 6 patients were female with a male to female ratio of 6:1. Pain abdomen was most common presentation (71% cases). Klebsiella was the most common organism found followed by E.coli and Proteus. 34 patients (81%) were from rural areas and 8 patients (19%) were from urban areas. Majority of the people belonged to middle class [20 patients (48%)]. 57% patients consumed vegetarian diet and 43% patients consumed mixed diet. 6 patients (14%) had phimosiis, 2 cases (5%) had meatal

stenosis, and 7 cases (17%) had enlarged prostate.⁴

Singh P. Et al, 2016, has conducted a study for a period of 1 years and has included 94 cases. 88 cases were male and 6 cases were female. Highest incidence of cases was seen in a younger age group (43.61%), which is followed by older age group (26.59%). Burning Micturition was the most common presenting symptom (92.5%). It was also found the 58 cases had sterile urine on culture (69%) and, out of the remaining 26 cases, E.coli was found in 16 cases (19%), followed by Klebsiella (3.5%). 83 cases (88.29%) belonged to the lower socio-economic status and 11 cases (11.70%) belonged to the middle socio-economic status. None of the patients belonged to upper socio-economic status. 87 cases (92.55%) were from rural areas, and 7 cases (7.44%) were from urban areas. 65 cases (69.23%) were vegetarian, and 28 cases (29.82%) were non vegetarian. 18 cases (19.14%) had BPH, 8 cases (8.51%) had Hypertension, 4 cases (4.25%) had stricture urethra, and 2 cases (2.12%) had phimosiis.³

Ramachandra ML et al, 2018, has conducted a study on 40 patients for a period of 1 year. Most of the patients belonged to the 51-60 age group (30%). 85% cases were male and 15% cases were female with a male to female ratio of 5:1. Pain abdomen is the most common presenting feature (55%). Klebsiella was found to be the most common organism (55%), which is followed by E. Coli (20%).⁵

AIM

To look for the bacteriological profile of urine in patients with urinary bladder calculi.

METHODS AND MATERIALS

Study Design:- Prospective observational study

Study Population:- 62 cases of urinary bladder calculi were included

Time Period:- 6 months (1st April, 2022 to 30th September, 2022)

This study was carried out in the Department of Surgery, Silchar Medical College. All the patients provisionally diagnosed with urinary bladder calculi, were admitted to the department of surgery and a proper history was taken and all the demographic details were recorded. Then, a complete Physical Examination was done.

Blood investigation such as complete blood count, renal function test, random blood sugar along with urine samples for routine examination and culture, were sent and the results were recorded.

Radiological Investigation such as Ultrasonography abdomen, X-ray KUB and intravenous urogram were done whenever required and a

final diagnosis of urinary bladder calculi was made.

Method of collection of urine:- The genitalia of the patient was cleaned properly, and then, the patient was asked to collect the mid stream morning urine sample in a sterile container. These containers were then, sent to the department of microbiology for culture.

Samples were then inoculated in a CLED agar media (Cystine-lactose-electrolyte-deficient agar) and then were incubated at a temperature of 37°C for 24 hours. Bacteriological flora of the urine is identified and the results of these tests were recorded and interpreted.

Inclusion Criteria

Patients of all ages, both sexes and radiologically proven urinary bladder calculi and gave consent for the study, were included in this study

Exclusion Criteria

Patients with renal stone, ureteric stones or urethral stone were excluded from this study.

RESULTS AND OBSERVATIONS

All the findings of this study were recorded and the results and observations are as follows:-

In this study, it was observed that most of the patient belonged to the age group of 51-60 years, and it was followed by 41-50 years.

Age group (in years)	No. Of cases	Percentage (%)
<20	10	16.13%
21-30	3	4.84%
31-40	8	12.90%
41-50	13	20.97%
51-60	17	27.42%
>60	11	17.74%
Total	62	100%

In this study, it was found that majority of the patients were male (52 cases) and the male to female ratio was observed to be 5.2:1.

Gender	No. Of cases	Percentage (%)
Male	52	83.87%
Female	10	16.13%
Total	62	100%

In this study, it was observed that E.coli was the most commonly found organism in urine culture, and is followed by Klebsiella.

Organism	No. Of Cases	Percentage (%)
Klebsiella	13	20.97%
E. coli	24	38.71%
Pseudomonas	5	8.06%
Staph. Aureus	3	4.84%
Proteus	6	9.68%
Sterile	11	17.74%
Total	62	100%

Out of 62 patients, 58 had presented with burning micturition and is found to be the most common presenting symptom in this study (93.55%). Lower abdominal pain and Dysuria was seen in 74.19% and 61.29% cases respectively.

Signs and Symptoms	No. Of Cases	Percentage (%)
Burning Micturition	58	93.55%
Dysuria	38	61.29%
Lower Abdominal Pain	46	74.19%
Retention of Urine	27	43.55%
Hematuria	19	30.64%
Fever	9	14.51%

In our study, it was revealed that, 13 cases had BPH, 5 cases had Phimosis, 10 cases had Stricture urethra, 7 cases had Meatal stenosis, 4 cases had Hypertension, 2 cases had Diabetes mellitus, and 6 cases had Anaemia.

Associated Illness	No. Of Cases	Percentage (%)
BPH	13	20.97%
Phimosis	5	8.06%
Stricture Urethra	10	16.13%
Meatal stenosis	7	11.29%
Hypertension	4	6.45%
Diabetes Mellitus	2	3.23%
Anaemia	6	9.68%

In this study, It was found that majority of the patients (34 cases) belonged to the lower class, followed by 16 cases, belonging to Upper

lower class. 9 cases belonged to the lower middle class, 2 cases belonged to the upper middle class and 1 case belonged to the upper class.

Socio-economic Status	No. Of Cases	Percentage (%)
Lower class	34	54.84%
Upper Lower	16	25.81%
Lower Middle	9	14.52%
Upper Middle	2	3.22%
Upper class	1	1.61%
Total	62	100%

In this study, it was revealed that urinary bladder calculi are more common in rural areas (88.71%) than urban areas (11.29%).

	No. Of Cases	Percentage (%)
Rural	55	88.71%
Urban	7	11.29%
Total	62	100%

In this study, it was observed that 40 patients were non vegetarians, and 22 were vegetarians.

Diet	No. Of Cases	Percentage (%)
Non Vegetarian	40	64.52%
Vegetarian	22	35.48%
Total	62	100%

DISCUSSION

After analysing the various parameters of the study, the results were recorded. Various studies of the past are studied and the findings are noted.

Age Distribution

In our study, it was found that most of the patients were from 51-60 age group (27.42%), which is followed by the 41-50 age group (20.97%).

Ramachandra ML et al has found in their study that majority of the patients were from older age group (30%). Singh P. et al has found in their study that, majority belonged to younger age group (43.61%), and is followed by older age group (26.59%). Malladad N. Et al has found that majority cases belonged to younger age group.

Sex Distribution

In our study, it was found that most of the patients were male (83.87%) and the male to female ratio was found to be 5.2:1.

Ramachandra ML et al has observed that, 85% cases were male and 15% cases were female with a male to female ratio of 5:1. Singh P. Et al has found that 93.61% cases were male and 6.39% cases were female. Shamshad M.F. et al has found that 46 patients (57.5%) were male and 34 patients (42.5%) were female.

Rural Urban Distribution

In our study, it was found that majority of the patients were from rural areas (88.71%) than urban areas (11.29%).

Malladad N. Et al has found that, 81% cases were from rural areas and 19% cases were from urban areas. Singh P. Et al has found that, 92.55% cases were from rural areas, and 7.44% cases were from urban areas.

Diet

In our study, it was found that 64.52% patients were non vegetarians and rest, 35.48% patients were vegetarians.

Singh P. Et al has found that 69.23% cases were vegetarian, and 29.82% cases were non vegetarian. Malladad N. Et al has found that, 57% cases consumed vegetarian diet and 43% cases consumed mixed diet.

Socio-economic Status

In our study, It was seen that majority of the patients belonged to the lower class (54.84%), followed by Upper lower class (25.81%).

Singh P. Et al has observed that, 88.29% cases belonged to the lower socio-economic status and 11.70% cases belonged to the middle socio-economic status. Malladad N. Et al has observed that, most of the patients belonged to middle class (48% cases).

Organism Found

In our study, it was found that the most organism in urine culture was E.coli (38.71% cases), and it was followed by Klebsiella (20.97%)

cases) and *Proteus* (9.68% cases). 17.74% cases had sterile urine.

Singh P. Et al has found in their study that, *E.coli* was the most commonly found organism in urine culture (19%), followed by *Klebsiella* (3.5%). 69% cases had sterile urine on culture. Malladad N. Et al has found in their study that, the most common organism found was *Klebsiella* (21%), followed by *E.coli* (16.6%) and *Proteus* (16.6%).

Ramachandra ML et al has observed in their study that, *Klebsiella* was the most common organism (55%), which is followed by *E. Coli* (20%). Shamshad M.F. et al has found in their study that, the most common organism was *Staphylococcus aureus* followed by *E.coli*.

Presentating Symptoms

In our study, it was observed that, Burning micturition was found to be the most common presenting symptom (93.55% cases). Lower abdominal pain and Dysuria was found in 74.19% and 61.29% cases respectively.

Singh P. Et al has found in their study that, Burning micturition was the most common presenting symptom (92.5%). Ramachandra ML et al has observed in their study that, Pain abdomen is the most common presenting feature (55%). Malladad N. Et al has found in their study that, Pain abdomen was most common presentation (71% cases).

Associated illness

In our study, it was observed that, 20.97% cases had BPH, 8.06% cases had Phimosis, 16.13% cases had Stricture urethra, 11.29% cases had Meatal stenosis, 6.45% cases had Hypertension, 3.23% cases had Diabetes mellitus, and 9.68% cases had Anaemia.

Malladad N. Et al has found in their study that, 14% cases had phimosis, 5% cases had meatal stenosis, and 17% cases had enlarged prostate. Singh P. Et al has found in their study that, 19.14% cases had BPH, 8.51% cases were hypertensive, 4.25% cases had stricture urethra, and 2.12% cases had phimosis.

CONCLUSION

Urinary bladder calculi is a common urological disorder, found in general population, mostly in elderly age group. It is usually associated with obstructive disease, leading to the formation of calculi. Majority of the patients presented with burning micturition, and on urine culture analysis, *E.coli* was found to be the most common causative organism. It was more prevalent in males. It was found more in the rural areas and in lower socioeconomic status people.

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